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JOINT FORCES STAFF COLLEGE
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"Army Aviation: A Critical Member of the 21st Century Joint Team"

by

William A. Ryan

MAJ, Army

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

Signature:_____

13 May 2005

Abstract

AUTHOR: Major William A. Ryan

TITLE: "Army Aviation: A Critical Member of the 21st Century Joint Team"

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Starting with the collapse of the Soviet empire in 1989, world events have clearly shifted the threat paradigm for the United States Armed Forces from the Cold War model to the Global War on Terrorism. However, the United States Army, and specifically, Army Aviation, was slow to realize this shift and adjust its force structure, training, and doctrine to reflect a new set of conditions. The Persian Gulf War of 1991 did not help Army Aviation with a vision for change either, although the forces were magnificent in that conflict. For the most part, although some downsizing was done, the same force structure and tactics in many formations that had been designed for fighting the Russian Cold War model were retained.

The United States Armed Forces must continue to push towards joint interdependence as the Global War on Terrorism is prosecuted for years to come. Army Aviation has the potential to play a decisive role for Combatant Commanders and Joint Force Commanders in combat theaters all around the world. In order to remain relevant as a member of the joint team, Army Aviation is in the process of transforming itself to like, modular, multi-functional aviation brigades that will be more robust, deployable, and sustainable throughout the full spectrum of operations. The end state is to provide our Combatant Commanders with increased combat power and flexibility on present and future battlefields.

This is being accomplished through an overhaul of Army Aviation's force structure and a complete re-structuring of aircraft and personnel. Once completed, aviation formations will contain one type of aviation brigade which will contain every type of aircraft and capability. This is being done by dissolving a majority of higher level aviation organizations and pushing that capability to the Army division level. Each of these divisions will see a substantial increase in numbers of aircraft. Additionally, the National Guard is being reorganized in much the same fashion, and will continue to be a ready and relevant member of the Army Aviation community. Finally, in an effort to close the gap with the capabilities and technologies of Special Operations Forces, SOF Aviation is cascading up to 17 different initiatives to the conventional force. This will greatly increase the capability of Army Aviation forces in low intensity and urban combat environments.

Army Aviation will only be a relevant member of the joint team as long as it continues to track with joint transformational doctrine and employment concepts. The *Joint Functional Concepts* define how the joint force will conduct operations in the foreseeable irregular and asymmetrical environment. The leadership of the U.S. Army has cross-walked these concepts with the capability that the new aviation brigades will possess. This will ensure that they are always relevant and a force of choice for the Joint Force Commander.

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INTRODUCTION AND IDENTIFICATION OF THE PROBLEM

In November 1989, with the fall of the Berlin Wall and the end of the Cold War with the Soviet Union, the United States instantly became the world's sole superpower. Many aspects of our national machine were faced with coming changes and new challenges, but perhaps no aspect of our national power required more immediate attention and focus than the military. Since that time and the Gulf War of 1991 in Iraq, the world situation has proved to be unpredictable and unstable with the rise of individual nation states proliferating weapons of mass destruction and global terrorism that threatens world order.

As a result, the military found itself at a crossroads, and instead of preparing for a well-defined threat in the Soviet Union, the Armed Forces were called to shape the international environment as never before through increasing numbers of no-notice humanitarian and small scale contingencies in locations that carried little importance during the Cold War (Thornton, 3). These rapid deployments forced the services to conduct a complete analysis of their capabilities and structure as relevant to this new environment. Additionally, the need was evident for joint interoperable forces able to operate seamlessly as part of a Joint Task Force. As a result, transformation has ensued, with a goal of ensuring all elements of the military will be relevant in any corner of the globe.

Of all the Armed Services, the United States Army perhaps has the largest transformation to make. Its structure, equipment, doctrine, and logistical requirements were developed and built on a massive build up capability, with a clearly defined threat in a known theater. The adversarial landscape and operational environment have now changed, and the Army leadership in the late 1990s began a movement towards a lighter, agile, more mobile force with sustained firepower.

As one of the greatest force multipliers on past and present battlefields, Army Aviation has been a primary choice of force across the full spectrum of both combat and non-combat operations. Its versatile capability provided commanders at all levels with numerous options to identify, locate, and defeat enemy forces as part of combined and joint operations. However, recent operations during Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) in the Global War on Terrorism (GWOT) and Military Operations Other than War (MOOTW) confirmed that Army Aviation is not fully optimized for joint operations. In order to continue to be relevant and able to respond to Combatant Commander's requirements, Army Aviation must become more joint capable. It must be equipped and organized to fight and leverage capabilities of other services to provide effects based outcomes for Joint Force Commanders. In short, it must become more deployable, responsive, flexible, information centric, and affordable while maintaining its lethality.

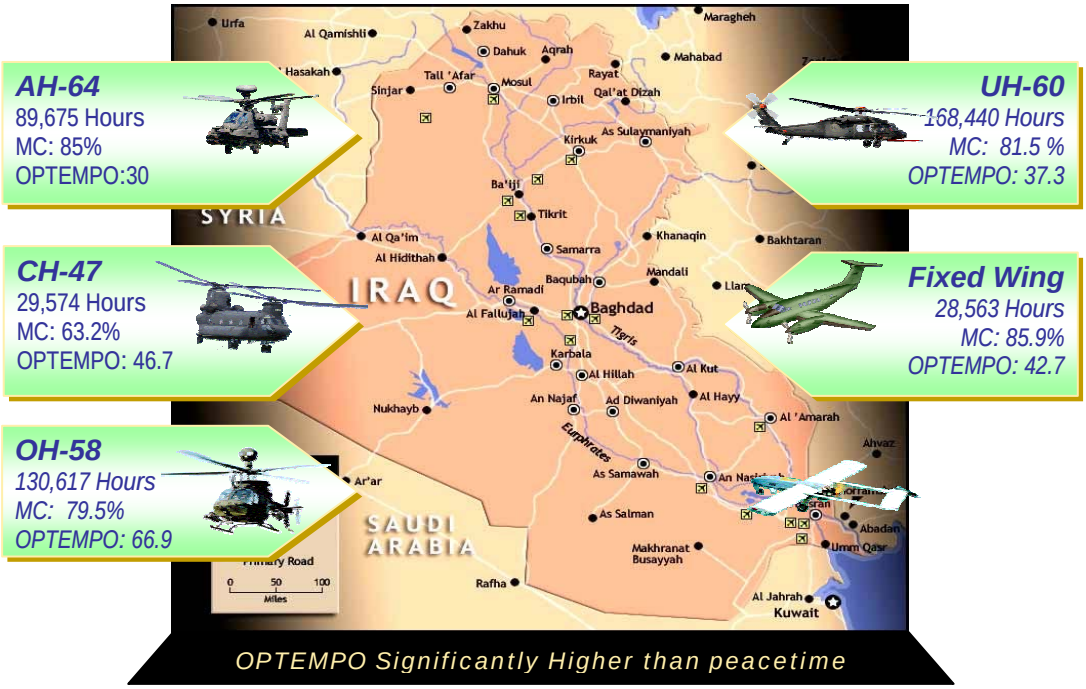
Given the foreseeable Operations Tempo (OPTEMPO) in terms of both mission pace and aircraft utilization around the globe, Army Aviation will become obsolete organized in its current fashion. The charts on the next page represent a summary of flight operations from 01 Feb 03 to 26 Dec 04 in both Operation Enduring and Iraqi Freedom. This chart is displayed in terms of hours flown and OPTEMPO, which is the average number of flight hours flown per month. The average number of flight hours for an Army aircraft regardless of type in peacetime is 13.1 hours. As shown on the next page by the "OPTEMPO" charts, combat operations during OIF and OEF have provided an hourly rate of two to four times the normal amount (Sinclair Aviation Branch Update, 4 & 5).

Army Fleet in OEF

66,009 Total Hours:
01 Feb 03 – 26 Dec 04

Army Fleet in OIF

476,936 Total Hours:
01 Feb 03 – 26 Dec 04



Clearly, if Army Aviation is to continue to be relevant to the joint force in terms of reliability and affordability, it must act to reduce these rates. Not acting in fairly dramatic fashion will

eventually lead to airframes that are not combat capable, and a fleet that cannot be maintained within the current structure or defense budget.

An additional consideration concerns the nature of the conflict and a discussion of the threat. These two portions of the nature of war are the main drivers for transforming Army Aviation. As part of a joint team, Army Aviation must be capable of operating across the full Range of Military Operations as defined by Joint Vision 2020. Combat power must be brought to bear as required by Combatant Commanders and right now Army Aviation is not optimally organized to do so. These are illustrated by the following diagram**.**

RANGE OF MILITARY OPERATIONS

(From US Joint Forces Command, 7)

Military Operations		General US Goals	Examples
COMBAT	War	Fight & Win	**Large Scale Combat Operations** **Attack/Defend/Blockade**
NONCOMBAT	**Military Operations Other Than War**	Deter War & Resolve Conflict	**Peace Enforcement** **Counterterrorism** **Show of Force / Raid / Strike** **Peacekeeping / NEO** **Nation Assistance/Counterinsurgency**
		Promote Peace & Support US Civil Authorities	**Freedom of Navigation** **Counterdrug** **Humanitarian Assistance** **Protection of Shipping** **US Civil Support**

Later in this paper, the missions that Army Aviation performs within this range of military operations will be identified. Presently, Army Aviation is not optimized to fight across this range of operations in the manner that Combatant Commanders require. It must be able to fight jointly as part of a Joint Task Force against any size enemy within this hierarchy. Most importantly, aviation forces must be able to transition seamlessly between these operations as the operational environment changes in theater. Only a joint and interdependent capable organization will provide the Combatant Commander with the correct force.

DISCUSSION OF THE THREAT

Going hand-in-hand with a discussion of the conflict is that of the threat. Here, the paradigm has clearly shifted from the Cold War model and into the Global War on Terrorism. However, from the end of the Cold War in 1989, the army was slow to realize this shift and adjust its force structure, training, and doctrine to reflect a new set of conditions. The Persian Gulf War of 1991 did not help Army Aviation with a vision for change either, although the forces were magnificent in that conflict. For the most part, although some downsizing was done, the same force structure and tactics in many formations that had been designed for fighting the Russian Cold War model were retained. Especially in these forces deployed in Europe, the majority of the tactics, techniques, and procedures continued revolving around the defeat of echelons of enemy armor formations.

In the meantime, the military began to participate in numerous humanitarian and nation building operations, and it was clear there would not be a large scale military adversary outside of Korea or an emerging China. There would certainly be no enemy similar to the Soviet Union. Small scale contingencies soon became the standard for the military. Additionally, there were also the first signs of global terrorism evidenced by the first World Trade Center bombing in 1993 and the bombing of foreign embassies in Africa in 1998. The nation as a whole was slow to realize the gathering threat of terrorism for what is was – Islamic Jihad against America, and responded to early incidents as a police action. The military, specifically the United States Army, did not begin to conduct wholesale change or re-organize itself in preparation to wage war against this new decentralized, rogue threat until 1999. As a result, following the terrorist attacks of September 11, 2001, the military found itself not optimally organized to fight this enemy. Although great progress is being made in the Global War on Terrorism, the inability to adjust

wholesale to what the threat has become since the end of the Cold War resulted in some sub-optimal performances by Army Aviation in places like Kosovo during Operation Allied Force and in Iraq during Operation Iraqi Freedom.

The predominant threat now is represented by radical Islam intersecting with technology by terrorist organizations that can strike the United States or its allies in any corner of the world (The White House, 2002, p. iv).

> This threat is asymmetric, "and as non state actors project no mirror image of the nation-state model that has dominated global relationships for the last few centuries. They are asymmetric in means. They are asymmetric in motivation; they don't value what we value; they don't fear what we fear. Whereas our government is necessarily hierarchical, these enemies are a network. Whereas we develop rules of engagement to limit tactical collateral damage, they feel morally unconstrained in their efforts to deliver strategic effects." (Brownlee and Schoomaker, 2)

This threat has no borders, and potential future attacks with weapons of mass destruction led the Bush administration to declare preemption as a strategy to deal with global terrorism both at home and abroad. Herein provided the emphasis for transforming to face down and defeat global terrorism.

Because no one knows when or where the next threat or terrorist actor will emerge, Army Aviation must be able to rapidly respond anywhere in the world as part of a Joint Task Force to deter aggression and destroy designated enemy forces. Presently, Army Aviation is not optimally designed to execute this strategy. Most importantly, this threat template is likely to remain for a great number of years and thus remain the focus of Combatant Commanders.

This asymmetrical and global threat provides unique challenges to Army Aviation at the operational and tactical level. This threat does not contain an enemy order of battle, marching out in the open, with large target arrays that can be destroyed from the air and tallied to measure mission success. The enemy's decentralized execution and the extremely austere environmental

conditions presented by Afghanistan and Iraq offer great challenges to aviation operations. In fighting this threat, aviation forces must be able to quickly harness and act on reliable information and intelligence. This will help seize the tactical advantage in unconventional war, as the enemy in Iraq does, for example, through simple cell phone networks providing early warning. Rogue terrorists and insurgents with rocket propelled grenades and anti-aircraft weapons are a threat to any aircraft at any time from any location. As a result, Army Aviation must be optimized for the lowest level threat, not high end threat (TRADOC response to Macgregor, 5).

THESIS STATEMENT

The before-mentioned issues in identifying the current problem result in the following thesis which I will prove during the course of this paper. **During our Nation's current and future military operations, Combatant Commanders and Joint Task Force Commanders combat power and flexibility will increase with the reorganization and restructuring of the United States Army's Aviation Brigades into modular, multifunctional units.**

RELEVANCE

> "Pete Schoomaker (GEN, Army Chief of Staff) and the acting Secretary of the Army are focusing instead on creating a 21st century modular army, made up of self contained, more self-sustaining brigades that are able to work for any division commander. As a result, the intention is that 75 percent of the Army's brigade structure would always be ready in the event of a crisis. Pete Schoomaker and I briefed the President on the Army's proposal. The president approved it" (Rumsfeld testimony).

Upon becoming the Army Chief of Staff in the summer of 2003, General Schoomaker identified seventeen focus areas for the Army leadership to assess and address. His overall vision revolves around making the Army lighter and more deployable with the primary emphasis on joint interoperability. Realizing the importance and relevance of Army Aviation, he

identified as his eighth focus area, “Army Aviation as a capabilities based maneuver arm optimized for the joint fight. Logistics tail shortened” (Army G3, 3).

Clearly, this is a “must do” time in the history of Army Aviation to capitalize on the transformation of the force as a whole and utilize available resources to make Army Aviation more joint capable and relevant. Recent operations from Operation Allied Force in Kosovo in 1999 to the current wars in Iraq and Afghanistan provide clear vignettes to support this mandated change for Army Aviation. The changing nature of conflict due in large part to the Global War on Terrorism, and the cancellation of the Comanche program have together provided the opportunity and resources for Army Aviation to make such sweeping changes. The Department of Defense leadership is focused on providing the best aviation support to Combatant Commanders and Joint Task Force Commanders. Finally, the future of Army Aviation as a branch and member of the joint team depends on making these changes. Without them, Army Aviation will render itself obsolete as a branch of the combined arms team. These modular brigades will equip Joint Force Commanders with increased lethality, agility, and flexibility in air-ground operations, while providing a rapid global response option.

BACKGROUND

A proper discussion concerning the multi-functional brigade should first be preceded by a discussion concerning where Army Aviation has come from since its inception as a branch in 1983. Prior to this time, Army Aviation was an asset contained within the division, corps, and theater structure but with no single proponent. Personnel and budget issues, in combination with the senior leadership favoring aviation as a separate branch led the Army leadership to formalize Army Aviation as a branch within combat arms.

Upon receiving approval and inclusion as a separate branch of the United States Army in 1983 by the Army Chief of Staff, Army Aviation organized its formations based on the Cold War threat. The force structure construct resulted in various types of organizations, each preparing to face different threats (Erwin, 5). This force was anything but modular, containing five different types of aviation brigades in the active force, and two different structures in the Army National Guard. Additionally, in the echelons above division and corps, these units were organized in different ways as well. The Army 86 study attempted to get its arms around the force structure issues, approving aviation brigades at the division level. These formations did not ultimately become reality due to the lack of resources in terms of manning and support structure. In all, this structure was approximately 8,300 personnel spaces short, which did not result in optimally designed war fighting organizations (Interview with Col Danielson). Army Aviation needed a re-look.

In 1993, new designs were approved during the Aviation Restructuring Initiative (ARI) that fixed the Army of Excellence (AOE) deficiencies but did not result in the kind of organization needed today. This initiative maintained the brigade structure, attained 100% fill of personnel billets, and reduced all the corps aviation structure by one regiment, resulting in standard 24 ship Apache battalions. As a result, some aviation assets were pushed down to division level. The unfortunate result of ARI, however, was the disintegration of the multi-functional organization that existed until that point (Interview with Col Danielson). As an example, the UH-60 utility aircraft, utilized for a variety of support missions, were removed from attack organizations. Although the leadership addressed serious issues, the force structure was still left wanting.

The next major look at Army Aviation came in 1999, when General Shinseki, the new Army Chief of Staff, introduced his vision of transformation. This was the first real effort in trimming the force into a lighter, more mobile organization, as it became apparent that smaller, lighter, and more lethal packages would be necessary. In a cost savings effort, the Army leadership wanted to divest its legacy aircraft (UH-1 Huey, AH-1 Cobra) from the National Guard, and subsequently wanted to transfer current aircraft from the active force to modernize National Guard units. Additionally, no additional aircraft were programmed for purchase. This resulted in Apache battalions in being reduced from 24 to 18 aircraft among other changes. It was clear that the Army was accepting too much risk at division level in order to modernize the National Guard (Interview with Col Danielson).

This transformation was abruptly halted on September 11, 2001, and subsequent lessons from Operation Enduring and Iraqi Freedom showed that the aviation force structure was not adequate to meet the Combatant Commander's requirements (Lynch, Army G3 Info Paper, 1). The formations were not robust enough, and there was still too much force structure above division level. Additionally, there was not enough lift capability at division level, equating to not enough support for the maneuver Brigade Combat Teams. More focus was required on close operations. Finally, the wide variance in the type of formations only confused war planners, and active units were put together on an ad hoc basis.

With the nation at war, the Global War on Terrorism provided expanded resources, and the Army leadership moved to the modular concept beginning in FY2003 (Interview with Col Danielson). As General Schoomaker, the current Chief of Staff, laid out his focus areas, including modularity, the leadership of Army Aviation took a unique opportunity to overhaul its force structure to ensure relevance with the joint force. With available resources to reshape the

force, Army Aviation will achieve standard formations within its go to war divisions, with units having like procedures, tactics, and training techniques.

As shown, throughout the last twenty years there have been moderate changes in the structure of aviation units, but not until 1999 did the Army leadership begin to take a major look at the structure and capabilities of its aviation formations. Budget issues are always at the forefront of all force structure debates, but with past operations showing the need to become more joint capable and interdependent, the Army leadership recognized that major change was needed. The relevance for Army Aviation has been shown and is obvious, and the Army must take advantage at this time in history and make the changes that will be long-lasting as the Global War on Terrorism proceeds for years to come.

In the now publicized and working Army Campaign Plan put forward by the current Army Chief of Staff, Army Aviation's transformation is clearly in synch with the overall objective of the total force; that is, reorganization to a lighter, capable, more joint force. These changes will address what the Joint Force Commander now lacks in capability. This will ensure that Army Aviation is relevant and a force of choice for Combatant Commanders. There are hard choices to make given resource constraints, but in the effort to increase jointness, the Army leadership has made tough choices with the cancellation of major weapon systems that do not match the operational environment of the future.

ANALYSIS

A comparative approach will frame the analysis that will support this thesis. The primary method in proving the thesis will include utilizing various historical vignettes to illustrate the shortcomings Army Aviation has had and how remedying these issues will provide for a far more joint capable force in the future. Additionally, obvious improvement beneficial to the ongoing Global War on Terrorism will be identified.

Using this format, a quick summary of the historical vignettes will be provided, highlighting where challenges were displayed in the employment of Army Aviation. A description of the multi-functional aviation brigade will follow, including the types that will exist, along with their associated equipment, personnel structure, and maintenance capabilities. After establishing the basic construct, specific analysis will define their benefits to the Combatant Commanders by tying them to jointness using multiple evaluation criteria. In this manner, each criterion will be used to validate the brigade through vignette comparisons, thus showing its overall benefit in joint operations. Where appropriate, interviews with senior aviation leaders will be provided to help validate key points.

The analysis portion will be completed with a discussion of the National Guard and its efforts to become more joint as well, followed by a discussion of Special Operations Forces' technologies that are being transferred to the conventional aviation force. Additionally, the Joint Functional Concepts will be utilized to further illustrate how the brigade will indeed be able to operate across the full joint Range of Military Operations. Furthermore, this will also show their maturation in the execution of evolving joint doctrine.

HISTORICAL VIGNETTES

Generally, it takes a major event to precipitate wholesale and long-lasting change in any organization (Interview with MG Quinlan). The benefit of dissecting past operations is that one can analyze what went right and what did not. Additionally, by looking at various operations, trends can provide proof that major change is needed. In this case, Operations Allied Force, Enduring and Iraqi Freedom clearly provide relevant examples for change in Army Aviation. Additionally, there are aspects of other operations that provide impetus for change as well. Obviously, there are always politico-military and budget factors that weigh in as well, but from a purely tactical and operational perspective, these vignettes provide striking visuals of where Army Aviation was not fully maximized to provide its full capability to Combatant Commanders.

OPERATION ALLIED FORCE: TASK FORCE HAWK

Following the failure of peace talks and escalating violence against ethnic Albanians in Kosovo, on 24 March 1999 the United States provided military forces in support of North Atlantic Treaty Organization (NATO) combat operations against Yugoslavia. Combat operations officially ended on 20 June 1999, with the Yugoslav acceptance of a peace plan and the United Nations (U.N.) endorsement of the plan (GAO report, 3).

Only days after Operation Allied Force commenced, General Wesley Clark, the NATO commander, requested a contingent of AH-64 attack helicopters be deployed to the combat zone to conduct deep attacks against Serbian forces in Kosovo (Lambeth, 1). When the U.S. and Albanian governments finally approved their use, it was Day 12 of the Allied Force Campaign. Besides the 24 AH-64s, Task Force Hawk also contained 26 UH-60L Blackhawk and CH-47D Chinook helicopters, a Multiple Launch Rocket System platoon, an Anti-Tank Company, a Light Infantry Platoon, and numerous other support personnel that totaled over 5,000 soldiers.

Initially destined for Macedonia, the Task Force was re-routed to the less secure country of Albania due to the high number of Kosovar refugees flooding Macedonia. It was at this point that the problems began for Task Force Hawk.

Initially the Department of Defense proclaimed that it would take ten days to deploy Task Force Hawk into theater. Because of the size of the ad hoc force package to support the Apaches, it ended up taking seventeen days to field the Apaches, and in all required some 500 sorties of C-17 aircraft to get the Task Force into Albania (Lambeth, 3). In terms of cost, by the end of May, the Task Force Hawk deployment reached $254 million.

Additionally, although military officials considered the Apache mission to be within the framework of its doctrine, it was not typical in that the pilots were supporting an air campaign rather than its traditional role of being used in conjunction with Army ground forces to engage massed formations of enemy armor. Additionally, the aircraft's planned attacks principally would have engaged widely dispersed and camouflaged enemy ground forces instead of massed formations (GAO Report, 7). Further compounding the issue were the significant problems the Army and Air Force experienced in their ability to work together jointly and in the interoperability of the command, control, communications, computers, and intelligence equipment used during the operation (GAO Report, 7). The mission planning and targeting system used by the Apache unit in Albania during Task Force Hawk was one of the older systems and was not compatible with the system being used by the Army team that provided liaison with the Air Force at the Air Operations Center (GAO Report, 7). As a result, the aviation units were not able to thoroughly integrate properly into the joint command and control architecture.

In the end, the Apaches in Albania conducted training flights but never flew any combat missions. This can be hardly attributed to the pilots and soldiers of Task Force Hawk, but rather is a reflection of how little the U.S. Army had done since Desert Storm to increase its capacity to get to an emergent theater of operations rapidly and with sufficient forces to offer a credible combat presence (Lambeth, 7). Even the outgoing Army Chief of Staff, General Dennis Reimer admitted in an internal memo to senior Army staff officers once the deployment package had finally been assembled in theater that the manifold problems encountered by Hawk had underscored a "need for more adaptive force packaging methodology " (Lambeth, 3).

As a result of Task Force Hawk, many lessons were learned in terms of training, materiel, doctrine, and deployment issues (better forward looking infrared, communication systems, planning considerations between services just to name a few). Many of the shortcomings that were identified by senior aviation leaders were resourced or addressed to make the necessary force improvements. However, holistic change has not been implemented or resourced, and in the meantime aviation forces have deployed into combat for both OEF and OIF with many of the same challenges faced by Task Force Hawk. The multi-functional aviation brigade will fix these and other shortcomings in the force.

OPERATION ENDURING AND IRAQI FREEDOM

Recent operations in Afghanistan and Iraq caused a rapid shift of aviation doctrine to focus its crews away from attacking large, massed armor forces arrayed in a linear fashion to developing and refining tactics, techniques, and procedures for attacking dispersed targets while on the move. This kind of "close in" fighting was not part of the mission essential task list for most Apache battalions in the past, but as discussed previously, is exactly what the enemy situation prescribes. Additionally, Army Aviation’s involvement in this theater will continue for

years to come and will be crucial in achieving the nation's military objectives. As a result, re-structuring into the multi-functional brigades will ensure that sufficient forces are always available to fight in all theaters and operate within the new operational environment.

Operations in Iraq and Afghanistan continue to provide clear illustrations of the need for change in certain areas. Although aviation forces continue to perform effectively, its structure and doctrine continue to impede the maximization of joint capability and battlefield efficiency. Army Aviation has been decisive in the conduct of combat operations, but there are shortcomings which continue to highlight the need for a change in structure and organization. Many aviation units deployed again as ad hoc organizations, combining assets from different organizations to make a fighting unit. Additionally, the lack of combat enablers (mainly intelligence and fire support) in a joint sense led to failed operations, including the initial deep strike by the 11th Attack Helicopter Regiment against the Iraqi Medina Republican Guard Division on 23 March 2003.

Here, on day 3 of Operation Iraqi Freedom, 30 AH-64 Apache helicopters from two separate battalions departed for a major deep attack with no coordinated U.S. Air Force support, no Airborne Warning and Control Aircraft, no A-10s in ground attack, and no jamming support (McCaffrey, 10). Additionally, there was no up to date enemy intelligence picture transmitted by the Joint Force Commander to the regiment. Finally, there was no effective artillery support for the Regiment's attack. This was a classic attack almost completely unsupported by the joint battle team (McCaffrey, 10). The end state included nearly every AH-64 helicopter returning with battle damage and one crew crashing in enemy territory and taken as a prisoner of war.

A lack of intelligence and situational awareness plagued the 101st Aviation Brigade during numerous planned deep strikes in support of the 3rd Infantry Division's movement

towards Baghdad. The lack of ability to collect intelligence on enemy locations and dispositions resulted in a subsequent inability to shape deep target areas. The brigade did not retain any assets under their control to collect intelligence of the target areas prior to mission execution. The results were cancellations of many planned operations.

Operations in Afghanistan showed the army aviation community again that split based operations present enormous challenges to aviation units in terms of maintenance and logistic support. The aviation task force at Kandahar did not maintain enough of the unique tools, parts, and personnel to split its operations nearly 300 miles apart at Bagram. This just adds additional variables to an already complex mission and often results in a particular asset not being available when needed. In other words, organizations are not tailored and robust enough to be able to perform in this manner.

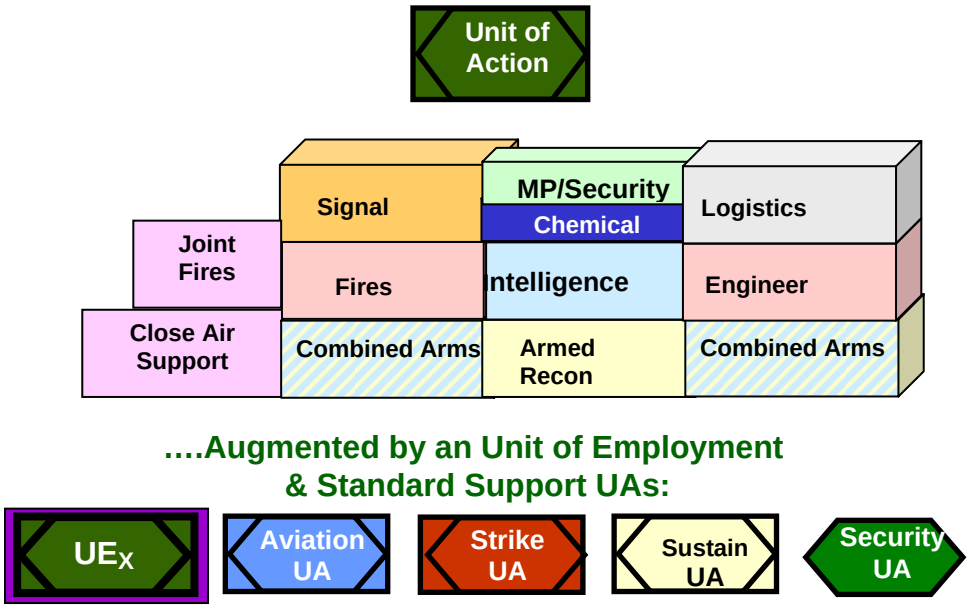
All of these issues manifest themselves at the tactical and operational level, where pilots and aviation soldiers conduct mission operations in support of the joint force. While the aviation force continues to perform effectively, changes must be made to strengthen the future contributions of Army Aviation to the joint battle force (McCaffrey, 8). The new multi-functional aviation brigade will do much to make the previous statement a reality, as it seeks to correct many of these deficiencies.

INTRODUCTION OF THE MULTI-FUNCTIONAL AVIATION BRIGADE (Sourcing for this section taken from the Army Aviation Task Force, Nov 2003)

Army Aviation primarily provides its greatest contributions to combined and joint operations within a ground scheme of maneuver. Its ability to provide a Joint Force Commander with combat power through the full spectrum of aviation operations make it an invaluable member of the joint team.

Once completed, a single aviation brigade will be optimized to support up to five maneuver Brigade Combat Teams. The design parallels, and is in support, of the new infantry and armor maneuver Units of Action and can therefore be tailored to support any maneuver package. The diagram below shows aviation vetted in the overall Army "modularity" concept. This figure represents an armored Unit of Action. It is the standard army maneuver unit that will be employed by Joint Task Force and Combatant Commanders. For deployment purposes, any one of the support Units of Action or a portion of them can be attached, based on mission requirements. Based on the Combatant Commander's requirements, any type aviation package can be attached for any operation. Additionally, because of their requirement to support up to five maneuver Units of Action simultaneously, the aviation brigades can be tailored to provide identical capability.

(ARMOR UNIT OF ACTION SHOWN-source Army G3, slide 15)



The goal in designing the aviation brigade is that they can be employed anywhere in the world in 96 hours. Also, by building them as tailorable units, they are appropriate for missions

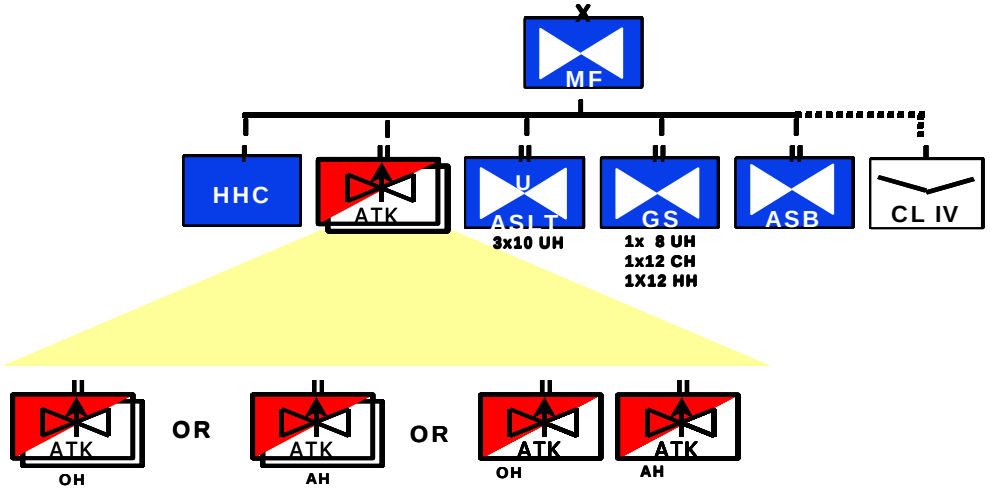
that span the entire range of military operations – from humanitarian assistance, through stability and support, up to major combat operations (Gordon and Wilson, 38). This is because the brigade contains every aircraft type organically and thus is equipped to conduct the full spectrum of operations. As a result, the brigade will provide great responsiveness to Combatant Commanders.

Starting at the lowest level, the basic building block for the aviation brigade is at the company aircraft level. There are five of these blocks, based on mission capability, and they can be categorized as attack, assault, general support, heavy lift, and MEDEVAC. The attack company will have 8 AH-64D Longbow aircraft or 10 OH-58D Kiowa Warriors. The assault company and general support company will have 10 and 8 UH-60s respectively. The heavy lift company building block will have 12 CH-47 Chinook aircraft, and finally, the MEDEVAC building block will contain 12 HH-60 aircraft. At this point, the UAV allocation has not been determined. There are multiple courses of action being debated to determine the proper structure and allocation at the tactical level. These are the base modular structures that will be utilized to create the battalions and subsequently the multi-functional brigade. This overall organization will be displayed shortly. The primary reasons for standardizing these company structures across the force are as follows (Army G3, slide 16):

1. More combat power will be in support of the soldier (Capable and Lethal)
2. Standard company sized capabilities (Modular)
3. Flexible for Task Organization (Tailorable)
4. Provide modular maintenance packages (Sustainable)

The wire diagram on the next page shows what the aviation brigade looks like on paper. From a macro view, the Army has designed three aviation brigades, which can be outfitted as

heavy, medium, or light depending on aircraft type. The only difference in these formations is what aircraft type the attack battalions contain. A light brigade maintains two OH-58D Kiowa Warrior squadrons, a heavy brigade employs two AH-64D Longbow Apache battalions, and a medium brigade has one battalion of each type aircraft. This variation in the aviation brigade allows the Joint Force Commander and his Army component commander to choose what type assets are necessary for the given operational environment, and ultimately, which combination of assets will provide the best support to ground forces.



The rest of the brigade shows why this structure is multi-functional. Besides the two attack battalions, there is one UH-60L assault battalion, containing thirty aircraft. There is also a general support battalion, which is composed of eight UH-60L aircraft, 12 CH-47 heavy lift aircraft, and twelve HH-60 medical evacuation aircraft. The brigade also contains an aviation support battalion which contains a robust maintenance and support package that consolidates much of the maintenance and service support performed at higher than brigade level. Although not in the short term, each brigade will eventually be supported by both an unmanned aerial

vehicle (UAV) detachment and an air traffic services component, which will provide increased organic intelligence, a common operational picture, and command and control air traffic functions for future air bases. Once imbedded, the UAV will be controlled by specialists at the brigade level, and will provide all tactical commanders real time, relevant intelligence capability currently seen at division level and above. All of these units will be in direct support of the aviation brigade. With the air traffic services section, each brigade will have its own way to control airspace, which results in allowing the aircraft to operate tactically away from a central air traffic facility and will provide for immediate airspace architecture at occupied airbases.

Overall, there will be eleven Army Aviation multi-functional brigades. Each heavy army division (1st Cavalry, 4th Infantry, 3rd Infantry, 1st Armored, 1st Infantry, and 2nd Infantry) will contain one heavy aviation brigade. The 101st Airborne Division (Air Assault) will contain two medium aviation brigades, with the 82nd Airborne Division receiving one. Finally, the 10th Mountain Division and 25th Infantry Division will both contain one light aviation brigade.

To make the increased numbers of aircraft available to the new brigades, the aviation force structure at corps and higher level are largely being dissolved. These aircraft are being re-allocated to their designated brigades in order to bring them to the new required numbers. As a result of this re-allocation of aircraft, each brigade will contain 120 aircraft. This is a dramatic increase for every Army division besides the 101st Airborne Division in terms of combat power by sheer numbers. On average, each division will gain 23 aircraft. Additionally, every aviation formation is standard across the Army. Specifically, each heavy division increases their aircraft inventory by 66%, including 14 additional reconnaissance/attack aircraft, 19 lift, and 10 heavy lift aircraft. Each light division sees a 41% overall increase with 20 reconnaissance/attack

aircraft, 5 lift, and 10 heavy lift. These numbers signify a large increase in lethality and combat power at division level and below, which is where this capability is needed. From lessons learned in current operations, JTF commanders need a more robust aviation capability. As discussed, the cut is made at corps aviation level and higher level echelons, which lose 51% of their aircraft inventory. Although the brigades are growing in force structure, the overall modular design results in lighter organizations as task forces are tailored with only the capability that is required for the mission.

In addressing the force structure of the brigade, the affect on personnel must be discussed as well. The average increase in overall number of personnel in the new structures is significant. Although there is an increase in pilots, much of the overall increase is on the support side. This predominately includes maintenance personnel due to the additional level of maintenance from the aviation support brigade that has been added. Additionally, because each one of these brigades is multi-functional and designed to support up to five maneuver Units of Action, a new cell has been created to help liaison with the maneuver units. Called the Brigade Aviation Element, this cell will be maintained at each maneuver Unit of Action and is responsible for synchronizing air/ground operations. It consists of six personnel, headed by an aviation major, and will bring great experience and expertise to the supported ground units. This cell will communicate the capabilities and limitations of Army Aviation as well as its employment techniques. They will interface not only with Army ground units, but will also be the liaison and planning manpower to Joint Task Force staffs and with other services as well. This will allow commanders to maximize aviation's use across the full spectrum of operations. This concept will be discussed later in greater detail.

Like the aircraft, all of these personnel increases at brigade level are accomplished through the dissolution of higher than division level aviation formations, and transferring those personnel to these brigade formations. There has been no "new growth" in the units. Again, combat units will deploy and fight as brigades or tailored subsets thereof, and now maintain the proper type and amount of personnel to accomplish their missions.

Perhaps the biggest benefit that will manifest itself in future joint operations is the change to the maintenance structure and sustainability of Army Aviation. Army Aviation has traditionally maintained a three level maintenance system, proceeding from aviation unit maintenance at brigade level and below, to aviation intermediate maintenance at division level, and finally to rear area depot level maintenance for major overhaul work. In the current structure, many of the maintenance actions required to return an aircraft to fully mission capable status are beyond the brigade's capability, as a result the work must be done at division level or higher. This can provide for slower turn around times for aircraft to get back into mission operations as well as certain parts and tools being only available at higher levels.

In the new multi-functional brigade, an aviation support battalion containing 328 personnel has been added. This will reduce organizations from the current three level maintenance model to two level maintenance. Aviation maintenance that is normally found at division level (intermediate maintenance) is being pushed down to the brigade, adding great capability. Only those repairs requiring depot level attention will require maintenance attention beyond brigade level. This allows for greater availability of spare parts and specialized personnel, and should provide quicker turnaround times for non mission capable aircraft due to maintenance.

At the company war fighting level, the aviation support company will employ modular, rapidly deployable aviation support platoons (ASP) that will be organic to the operational company. These ASPs will be manned and equipped more robustly than the current aviation maintenance companies. As a result, they can push forward to support operational companies working for ground maneuver elements. Additionally, the Class III/V platoon personnel are embedded in the aviation support company and will support individual company level mission support (Army Aviation Task Force, 82).

Although there is an increase in personnel resulting from the added maintenance capability, the benefit to JTF commanders is impressive. These company level elements can be placed under operational control (OPCON) to a maneuver brigade and sustain themselves in any corner of the Joint Operations Area (JOA). They will have the personnel, tools, spare parts, testing equipment, etc., co-located with the operational company they are supporting. This will provide commanders with shorter non mission capable times as aircraft will be able to be repaired on site and brought back to fully mission capable status faster. This will result in increased combat power during sustained combat operations. Finally, to help make this new maintenance structure achieve reality, there are major upgrades in terms of technology that are being introduced. These will be discussed shortly in the analysis portion.

JOINT IMPROVEMENTS WITH THE MULTI-FUNCTIONAL BRIGADES

Given a background and introduction to the mechanics of the multi-functional aviation brigade, the examined vignettes will be applied against certain evaluation criteria to illustrate where the brigades will provide significant new capabilities to the Combatant Commanders. The seven criteria include Tailorability, Deployability, Logistical Tail, Intelligence and Situational Awareness, Mode of Conflict, Interdependence, and Maintenance. These criteria will be defined

from an operational level point of view, which is the objective of this paper. Following its definition, I will then explain, using assorted vignettes, how the multi-functional aviation brigade will provide increased capability to the Joint Force Commander. It should be noted that there are additional criteria and issues concerning doctrine and leader development with the new modular structure, however those will not be discussed in detail here as a direct benefit to the joint fight.

In defining the criteria, they are introduced in a systematic order, paralleling a hypothetical operation from notification through mission completion. Following a description, each step will be examined in detail. First, upon notification, a Joint Task Force immediately assembles a team and "Tailors" the force package based on the mission type and expected duration. Tailoring an aviation force package includes identifying and adapting combat assets by desired capability in accordance with the JFC's mission and subsequent vision of aviation operations. Aviation units will only utilize the capability that is needed for the operation. From there the JTF moves into the "Deployment" phase, which involves the rapid movement of that tailored, capabilities based package to a theater of conflict. For the Joint Force Commander, successful deployment is defined as the proper force being combat ready in the JOA and JRSOI complete. Aviation packages will be required to deploy to any JOA in the world, including many austere environments.

The Achilles heal of combat operations and the portion that is hardest to plan is generally the concept of support. If not planned for as a separate operation, the mission will generally fall short of success. As a result, prior to initiation of operations, the "Logistical Tail" must be in place and prepared to support the mission. Operationally, the logistical tail includes not only the proper personnel, parts, and technology to ensure that aircraft are optimally supported and combat ready, but also includes a joint theater logistical system that must be organized to sustain

the force during combat operations. The successful establishment of the logistical tail will ultimately contribute largely to aircraft availability throughout the duration of the operation. Combined with the logistical support, accurate and timely "Intelligence" is critical for successful application of aviation assets, especially those operations conducted deep into an enemy's Battlespace. Intelligence includes the assets utilized and the information gained by those assets that are required for aviation operations. Army Aviation achieves a much greater rate of success for a Joint Force Commander when the aircrews receive relevant intelligence and adequate shaping is conducted.

With the logistics and intelligence aspects of the mission planned and resourced, the operation is planned and conducted from within the "Mode of Conflict" hierarchy. The mode of conflict includes the type of joint operation being conducted, and is executable across all Service capabilities. Army Aviation will perform any of these missions as an integral part of the joint team. Additionally, aviation support forces must be able to sustain these operations with robust packages including Forward Arming and Refueling Point (FARP) and MEDEVAC operations.

Finally, the Armed Forces seek to optimize joint "Interdependence" by harnessing the Services' different capabilities. In a joint context, interdependence includes harnessing the power and effects of different service capabilities to achieve desired mission effects. Army Aviation is a tremendous asset in the attainment of interdependence from a command and control, intelligence, and fires standpoint. It will provide the JFC with a shared situational awareness as well as precision fires where appropriate. Just as important as the mission itself, is the "Maintenance" that must be performed to recover the aircraft to prepare them to launch again on another mission. Army Aviation's ability to provide combat ready aircraft to a JFC is predicated on both efficient maintenance systems and practices that are in place. Aviation

maintenance ties in with the logistical tail as well, but it is the organization and processes that are manipulated to ensure that the combat availability of the aircraft is always at peak level for the JFC.

With joint descriptions provided for each criteria, they will now be broadened to show in detail how Army Aviation intends to be a force of choice for the Joint Force Commander. Previously studied vignettes will be used as a comparative tool to show the improved impact that Army Aviation will provide in the joint operational environment in future conflicts.

Tailorability.

> "The more modular the Army's capabilities, the better we will be able to support our sister services, whether by the air defense protection of an advanced sea base, compelling an enemy ground force to mass and thereby furnish targets for air attack, or exploiting the transitory effects of precision fires with the more permanent effects of ground maneuver." (Brownlee and Schoomaker, 8).

Tailorability is accomplished, as shown previously, through the basic building block from the force structure standpoint. Because these formations will all originate in the basic company building block, Combatant Commanders will be able to task organize their operational forces by pulling the necessary capability required for each mission. Perhaps the biggest benefit will be seen in the planning arena. High level staff planners currently are often times not sure what type aviation structure will arrive in theater on a unit rotation. This obviously complicates force projection planning and troop to task ratios in theater. Like structures will help to ease this problem and provide more fidelity to staff planners.

The book, ***Iraq War***, suggests that "America's land forces need to tailor and combine the various combat branches at lower levels of organization than is currently the practice" (Iraq War, 243). What the United States needs in the future are smaller, leaner, brigade sized units that can deploy more quickly and fight independently (Murray and Scales, 243). The new multi-

functional aviation brigade represents such a brigade sized unit that will not have aviation force packaging issues. If this concept had been realized in the planning for force deployment for Task Force Hawk, the deployment struggles the task force experienced would have been greatly reduced. By having such a multi-functional aviation brigade, the unit would have been deployed easier, and would have arrived into theater as a prepared fighting force. Additionally, the aviation force could have been tailored with ground forces to conduct effective, joint operations had a ground war been introduced.

In the case of Operation Enduring Freedom, the ability to tailor both operational and maintenance assets would have resulted in greater combat power for the first army aviation task force deployed to Afghanistan in support of Operation Enduring Freedom in January 2002. Designated as Task Force Talon, this aviation task force was assembled in support of Task Force Rakassan, the 3rd Brigade Combat Team from the 101st Airborne Division (Air Assault). Deployed to Kandahar, Afghanistan, Task Force Rakassan conducted offensive operations against the Taliban and other terrorist elements in support of the Global War on Terrorism.

In the past, because aviation brigades did not maintain all types of rotary wing assets, aviation task forces were put together on an ad hoc basis, depending on the request for forces and the directed mission. Task Force Talon was no different, and elements were taken from four separate brigade level organizations and placed under the command of a CH-47 battalion headquarters. The task force consisted of a CH-47 Chinook company (16 aircraft) from the 159th Aviation Brigade, an AH-64A Apache company (8 aircraft) from the 101st Aviation Brigade, a UH-60 Blackhawk company (10 aircraft) from the 159th, 3 additional UH-60 MEDEVAC aircraft from the Division Support Command, an Air Traffic Services section from XVIII Airborne Corps, and additional maintenance support from the Division Support

Command. This “pick up game” method of tailoring a combat force using assets and capabilities from across multiple organizations is not the optimal solution.

Putting together an ad hoc Task Force also increases the complexity of operations when forces must be split based. As already mentioned, the Task Force pulled together three different types of aircraft in company sized formations, all with maintenance assets coming from their parent units. Additionally, the intermediate maintenance capability was cut from the Division Support Command, and had not deployed in such a configuration. When the Task Force split on occasion and deployed aircraft forward to Bagram airbase from Kandahar for extended periods of time, those precious intermediate maintenance assets had to be split to support operations some 300 miles away. As a general rule, aviation battalions and companies are not organized to conduct split based operations for extended periods of time. Task Force Talon was being split on a routine basis to support various operations in theater.

This situation is remedied with the new aviation brigades. With the company building block concept, all of these company sized units are deployed with their own organic maintenance support from their aviation support platoon. As a result, if a company building block has to be split away from its parent unit, it retains the necessary maintenance support without cutting capability away from the parent unit. As discussed, these maintenance organizations are able to sustain these operational units during all mission operations. Furthermore, they can be task organized with other company building blocks to fit any type mission. Because they train together and pull support from the same parent brigade, the overall amount of combat power provided to a Joint Force Commander is maximized across the spectrum of aviation operations.

Deployability. A portion of deployability is obviously a function of the strategic lift available and the order of precedence for a deploying Joint Task Force as contained in the Time-

Phased Force and Deployment Data (TPFDD). However, the intent is that aviation packages will be readily deployable because of their modular and cohesive nature. This will result in an ability to rapidly package specific capabilities and support structure for the mission environment, and will lead to a quick entry and build up in theater. Additionally, force deployment is not complete until that force is combat ready in the designated theater. Part of this process is the ability to rapidly build combat power upon arrival and ready to conduct operations based on the order of the Joint Force Commander. The ability of the aviation brigade to rapidly push through Joint Reception, Staging, and Onward Integration (JRSOI) is paramount.

Referring back to Operation Enduring Freedom, with only a few weeks until the earliest departure date from Fort Campbell, Task Force Talon was faced with many challenges. First, the battalion staff had to organize itself to plan for warfighting capabilities and logistical requirements from new units. Additionally, although the different companies were trained to their Mission Essential Task List, the Task Force as a whole had never conducted collective training together. Perhaps the most challenging task for this unit was the assembly of the proper and robust maintenance package to support all types of deploying aircraft. Tool sets, personnel, and spare parts were all issues that had to be war gamed for and resolved prior to deployment to ensure the Task Force had the right maintenance and sustainment capability.

Although Task Force Talon deployed into theater and performed effectively, it was not before these serious deployment challenges were resolved. This is not an acceptable standard for deploying an aviation task force into theater. This deployment is a clear illustration of where the optimization provided through the new brigade would have lent to a much easier deployment. To begin with, the “ad hoc” assembly of an aviation task force not used to each other’s capabilities is negated. For future Task Force Talons, an entire multi-functional battalion or

brigade with the same capability will deploy for this effort. A whole unit, collectively trained together and mutually integrated with each other's capabilities is an optimal solution to this challenge.

In the aftermath of Task Force Hawk and operations in Kosovo, Major General James Dubik, U.S. Army, said in an interview, "we don't want to prepare better for the last war. We want to be ready for the next kind of war. And what the next war needs is a force that can go into anywhere very quickly, doesn't need a big logistics tail, doesn't need a main airport" (Dubik, 4). Although there were political factors that delayed its deployment, this was again a Task Force created from two separate AH-64 battalions and their associated equipment and maintenance assets. Task Force Hawk ultimately required 500 C17 sorties to get to the area of operation (Lambeth, 3). Many of these were consumed by aviation support assets. To support 24 AH-64 helicopters (12 each from two different squadrons), the Task Force deployed the aviation unit maintenance company from each squadron as well as a portion of the aviation unit intermediate maintenance company. This equates to two squadron's worth of maintenance to support one squadron's worth of aircraft.

The new brigades will provide for easier deployments due to administrative, logistical, and operational considerations already planned for prior to notification of deployment. What took three weeks to be prepared to deploy will take 96 hours with the new brigades. Maintenance and support packages will already be robust enough and tailored to support the operational units, as a result load plans will have great fidelity. This makes the strategic air portion and building of combat power on the other end in theater easier as well, and should lend itself to a very sufficient JRSOI process.

Translating this capability to the Joint Force Commander, there are tremendous benefits. First, upon identifying the need for an aviation brigade in theater, he will have fidelity in knowing that it will rapidly deploy assuming strategic air is dedicated. Additionally, it will deploy with all the capability required to execute all missions upon completion of JRSOI. Because of their similarity, the received capability is understood, and the JFC will also understand when the force will be combat ready based on standardized JRSOI procedures.

Logistical Tail. The requirement to make logistical operations more effective and efficient has been a fundamental objective of the Army's on-going transformation efforts. This objective is equally fundamental and important to the transformation of Army Aviation in the move to become more joint "relevant" (TF Aviation, 71). As a result, one of the key tenets of the new aviation brigade is the effort to reduce, or shorten the logistical tail. Currently, maintenance soldiers comprise 85% of the aviation force structure (Army Aviation Task Force Recommendations, 14). This is a clear indication of the amount of support personnel it takes to maintain the aircraft for continuous operations. The Army leadership realizes that for Army Aviation to be a rapidly deployable and sustainable force in the joint fight, the length and complexity of its logistics process must be reduced, while at the same time be more efficient than at present. The end state is increased combat power for Joint Force Commanders through increased aircraft readiness rates.

In Afghanistan, Task Force Talon maximized its logistics capability by increasing the number of maintenance personnel above its end strength. These actions, while required to ensure combat success, built a large tail of logistical support without even accounting for the additional lift, fuel, spare parts, and munitions required to move and support the force as well. It is standard for aviation forces to "beef up' their maintenance posture when possible during real world

contingencies to ensure there is enough support to conduct continuous operations. However, the message is that maintenance processes are not optimal, and the overwhelming size of maintenance personnel packages is the result of inadequate force structure and a logistical system that is clearly burdensome and antiquated. This can have an overall negative impact on sustained battlefield maintenance when subsequent amounts of aviation forces are deployed and cannot "borrow" from other units.

To ultimately improve and radically shorten the logistics tail requires long term actions within the Army and Joint distribution processes. The logistics tail is a function of business process and consumption. Within the component of consumption, there are optimal solutions that will positively affect this problem so army aviation can provide more reliable and sustainable aircraft.

What can be done to shorten the tail? The long term goal (up to 7 years) is to move to a state of "condition based maintenance." Here, maintenance is conducted based only on evidence of need. Presently, it is conducted on a time driven and periodic requirement basis, as in scheduled or un-scheduled maintenance. The aviation phase maintenance system (much like a 50,000 mile car inspection) is labor intensive and often results in additional maintenance requirements from parts breakage during inspections (TF Aviation, 80). Assuming there will always be some form of un-scheduled maintenance, condition based maintenance focuses on optimizing the amount of scheduled maintenance.

Scheduled maintenance accounts for the majority of aircraft down time. The criteria for performing scheduled maintenance is not driven by the particular use of the aircraft or its current condition but depends historically on averages in an attempt to forestall system failures (TF Aviation, 80). Also included in this program is the replacement of parts whether they are needed

or not. This approach was implemented many years ago as a proactive approach but it is outdated now with the advent of predictive and prognostic technologies (TF Aviation, 80). Once these technologies can be harnessed, their application will overhaul scheduled maintenance and increase aircraft availability through condition based maintenance. This will also provide predictability to the repair parts system, which will drastically streamline logistical requirements (TF Aviation, 80). This effort in concert with an on-board interactive technical manual system for maintenance personnel will provide a tremendous capability to Joint Force Commanders. First, in combination with the two level maintenance system that has already been discussed, most maintenance actions can be completed forward and on site, with a reduced number of personnel and stress to the supply/repair parts system because the diagnostics have driven specific maintenance actions. Scheduled maintenance becomes much easier to handle, and the unit's logistic tail is reduced via personnel and spare parts.

Additionally, future sea basing of logistics capability offers additional logistical tail savings by moving sustainment maintenance and supply capability closer to the requirement and improving customer wait time (TF Aviation, 95). Although the Army has not conducted sea basing of logistics since the Vietnam War due to associated costs, this is a viable alternative that is being explored for future use. In these previous examples, the customer is ultimately the joint warfighter, and through these initiatives will have more predictable combat capability from a more efficient process.

In the near term, although the effects are difficult to quantify, the new aviation brigades begin to reduce the logistics tail by the move to two level maintenance, which reduces customer wait time for aircraft by 25% (Army Aviation Task Force Recommendations, 14). Additionally, by placing the maintenance platoons further forward in the fight, aviation has eliminated 26

aviation intermediate maintenance companies, which allows more distribution of capability at the maintenance platoon that directly supports the operational company.

All of these efforts, in combination with the purchase of additional battle damage assessment and repair kits, new shop equipment contact maintenance sets, and other aviation maintenance technology initiatives will produce a much streamlined maintenance organization that will be more deployable while providing increased efficiency. Army Aviation's "customers," the ground forces, will be much better served, and Joint Force Commanders will not have a logistical footprint as large as in the past. In the continuing Global War on Terrorism, this reduced tail will make a significant difference both in terms of strategic air to get to subsequent locations as well as the efficiencies in providing combat ready aircraft to the JFC.

Intelligence/Situational Awareness. As Army Aviation conducts operations forward of ground forces in an effort to set the conditions future operations, these operations are optimally executed when aircrews possess adequate information and intelligence of the target areas. Whether it is a deep strike mission, an air assault operation, or MEDEVAC, it is imperative that aviation assets have relevant intelligence of the intended target areas and those areas along routes of flight that might impede mission accomplishment. The "shaping" of all these areas is accomplished first through accurate, timely intelligence and when required, the destruction of enemy forces able to influence the mission. This requires dedicated intelligence platforms and when tactically prudent, human intelligence on the ground. When the enemy strength and disposition are extremely vague there is increased risk placed on both aircrews and the ground forces they support.

Army Aviation brigades do not contain the organic assets required to gather and process intelligence during shaping operations. These platforms generally reside at division level and

higher, many of them at the national level. Often times, these limited assets and the information they gather are not allocated down to an aviation brigade performing a deep attack or air assault operation, even if the operation has a large impact on the ground scheme of maneuver. On most occasions, intelligence, surveillance, and reconnaissance (ISR) assets such as UAVs are utilized to collect information deeper into corps Battlespace as senior commanders shape their areas. They are also involved with tracking current operations. As a result, aviation operations are at times conducted without adequate intelligence or shaping. Furthermore, in the case of Operation Iraqi Freedom some aviation missions lacking proper intelligence were not conducted at all.

During the early stages of Operation Iraqi Freedom, as V Corps ground forces advanced through Iraq enroute to Baghdad, the 101st Aviation Brigade of the 101st Airborne Division (Air Assault) was tasked to conduct deep attacks to destroy enemy brigades of the Medina Division of the Iraq Republican Guard. Most of these operations were to the west of Baghdad and designed to seal the main enemy avenue of approach from the west. This scheme was designed to ensure the left flank of the 3rd Infantry Division was protected enroute to Baghdad.

Because the exact disposition and location of the enemy was unknown, the brigade requested the use of "shaping" assets to provide intelligence during the deep pre-mission planning. Conducting a deep attack without adequate intelligence often leads to a movement to contact well forward of friendly forces, which is not an effective option. This is exactly what happened however, as the requested intelligence assets and analysis of the target area never materialized to help shape the attack in the proper way. Nevertheless, the operation was launched, and the end state was met as the 101st Aviation Brigade was able to attrit enough of the enemy force to accomplish its mission.

However, in follow on operations, there were multiple attacks that were planned but not conducted because the enemy situation could not be verified through proper “intelligence” and “shaping” prior to launch. There were no assets dedicated to the collection of intelligence in the days and hours prior to the attacks. A primary lesson learned from operations in Iraq was that deep aviation operations must have dedicated collection assets to provide intelligence of designated target areas so their missions can be shaped for success. For example, if the brigade had received dedicated UAV support, these intelligence shortfalls would have been overcome and these missions could have been performed. In summary, aviation missions having operational level impacts must have better ties to information and intelligence from those critical national sources.

A partial solution to this problem is the procurement of dedicated UAV assets that will eventually reside at division level in direct support of the aviation brigade. This tactical ISR asset will become an integral part of aviation operations when necessary. They will be utilized across the full spectrum of aviation operations, from deep attacks to operations in an urban environment. Although the overall force construct and exact allocation for UAV platforms is still being debated, it is clear that such support will be available for aviation commanders when requested.

The Army Aviation community has already done much work in the arena of UAVs, and as these systems are introduced and properly employed, the result will be a synchronized, dynamic, execution between manned and unmanned systems across the battlefield. The UAV will conduct the most dangerous and risky mission, but an aircraft nearby will still have a human in the loop to decide when and if to conduct lethal operations (TF Aviation, 52). In a technique called Manned and Unmanned teaming, the UAV will provide the intelligence and situational

awareness which will allow the human or decision maker forward in another aircraft to fuse information and synchronize the combat actions of the joint team. It is easy to see that the operations of aviation forces in the previously discussed attacks during the Iraq War would have benefited immensely from this concept. The brigade could have gained information and intelligence at any point in the mission execution cycle, which would have assisted in shaping the target areas for the aircrews.

The implications for the manned and unmanned teaming for a Joint Force Commander cannot be overstated. This capability, once fully fielded, will provide real time intelligence and situational awareness down to the individual pilot or soldier level when they need it. While previously this type of asset only serviced the senior commander at the corps or division level, now the executors at the tactical level will have the benefit of UAVs. This will provide more lethality to aviation brigades and thus the Joint Force Commander by being able to mass the power of Army Aviation at the decisive point. Additionally, effort and resources in terms of aircraft can be saved as well by not utilizing aviation assets in areas where UAVs are more suitable. Most importantly, the survivability of the aircrew is increased as UAVs can be put in more risky and dangerous situations on the battlefield to assist in developing the situation. The struggle over national level ISR assets will always persist, but the commitment to the tactical UAV and its capability to be a great partner in aviation operations is a great stride forward in information sharing, and only promotes a joint capability.

Mode of Conflict. From the chart on page 2 of this paper, ***Joint Vision 2020's*** Range of Military Operations clearly prescribes what the spectrum of conflict consists of from combat to non-combat operations. Army Aviation must be able to execute any of these operations within the context of a joint operation. What is important is that the aviation force is able to

demonstrate great flexibility in moving in and out of these different type operations. Traditional mission execution in accordance with airframe type is still important, but aviation forces must have the training and collective capability to provide Combatant Commanders one cohesive unit that can move from combat to non-combat type operations effortlessly.

The recent ***Army Aviation Task Force,*** chartered in 2003 with making these holistic changes in the fall of 2003, broke down the range of military operations further and defined those aviation roles and missions that are essential in the Joint Operational Environment. These roles are also nested within the Joint Functional Concepts and will be discussed later. These missions include:

- **Lift / Transport / Assault / MEDEVAC** (Vertical Maneuver, Air Assault, Downed Aircrew Recovery, CASEVAC, Aerial Sustainment, Cargo Transport, Retrograde Operations)
- **Reconnaissance / Security / Surveillance** (Route, Area, Objective, Screen, Guard, Cover, Convoy Security, Special Electronic Mission Aircraft, UAVs and Manned, Unmanned Teaming)
- **Attack** (Mobile Strike, Deep Operations, Close Combat with Ground Forces)
- **Battle Command on the Move / Air Space Management** (Air Traffic Control, Air Traffic Services, Airspace Management: Joint Integration, A2C2
- **Aviation Sustainment** (Maintenance Management, Aircraft and Component Repair, Aviation Supply Operations, Aircraft Recovery, Retrograde Operations, FARP Operations (Army Aviation Task Force Recommendations, 25).

Although a wholly encompassing task list, the aviation brigade must be able to perform all of these tasks in any environment with their new structure. There are numerous examples

where such a structure during past conflicts would have made execution at the joint task force level much easier. During operations in Kosovo, the Apaches of Task Force Hawk were not planned to be used in accordance with their primary mission – deep strike. Instead of this traditional role, as discussed previously, the aircraft were going to be used against widely dispersed and camouflaged enemy ground forces instead of massed formations (GAO Report, 7). Many observers contend that the Apaches were never used in combat because the mission was outside the trained capability of the aircrews. This is in part due to the long time focus of European aviation forces on the deep strike mission against Soviet armor formations from the Cold War model.

Given this different threat, which has proven to be the primary type threat the Armed Forces will face for some time, Army Aviation formations cannot rely on having a "primary" mission of deep strike or any other unique operation. For some time, these units were not sufficiently trained or prepared to operate across the spectrum of operations, and it was manifested here as well as during the initial deep strike during Operation Iraqi Freedom.

The uniformity of the multi-functional aviation brigade is the first initiative that will contribute to operating across the spectrum of operations. Each brigade now maintains the organic assets to accomplish any mission without having to utilize assets from another organization. Each unit can now collectively train with its own airframes across this range of operations. Additionally, this will lend itself greatly to the lessons learned from Operations Allied Force, Enduring and Iraqi Freedom as doctrine and training are adjusted to focus units on all mission sets. As all aviation brigades eventually transform to the multi-functional structure, the tactics, techniques, and procedures that are battle proven must be captured and integrated across the force.

Additionally, in the aviation sustainment arena, the improvement in capability has increased enormously. With a General Support Aviation Battalion (GSAB) in each brigade, maintenance and support functions can be planned and executed with organic assets, and do not have to be outsourced to other units. Functions such as the establishment of Forward Arming and Refueling Points (FARPs), positioning of support troops, and transportation of critical spare parts, to name a few, can all be done across any operation at the will of the aviation commander. Additionally, in the area of MEDEVAC operations, each aviation brigade will be able to plan and execute their own operations, which leads to increased efficiency in planning and execution. These are all important benefits to a Joint Force Commander as the staff plans for aviation operations in theater. Most importantly, the ability to conduct all of these operations will allow the aviation force to move across different modes of conflict without large operational pauses to re-task organize.

Joint Interdependence. Perhaps the greatest benefit that will be derived from the Multi-Functional Aviation Brigades will be the increased effort towards joint interdependence and effects based operations between Army Aviation and other Services.

> "Interdependence is more than just interoperability. It is the assurance that service capabilities can work together smoothly. It is even more than integration to improve their collective efficiency and effectiveness. Joint interdependence purposefully combines service capabilities to maximize their total complementary and reinforcing effects, while minimizing their relative vulnerabilities. The nature of expeditionary operations argues for leveraging every potential tool of speed, operational reach, and precision. By projecting coordinated combinations of force unhindered by distance and generally independent of terrain, we can achieve maximum effect for the Joint Force Commander without regard to the service of origin" (Brownlee and Schoomaker, 5).

In the end, what the joint force seeks is "reciprocal interdependence, where the output of one organization becomes the input for others and vice versa. Organizations become less

distinguishable from each other and their combined performance requires complex forms of coordination" (Crupi and Paparone, 2).

Although the military as a whole has much work to do in the pursuit of joint interdependence, its effects were stated quite succinctly by a senior ground commander during Operation Iraqi Freedom. This commander confessed that "in the heat of battle he had no idea of the source of the destructive power in front of him. It could have been air force, navy, or marine. All I cared about was that the stuff was killing the enemy" (Murray and Scales, 242). This is the essence of joint interdependence. There are three areas that will be addressed as they relate to Army Aviation's push towards interdependence. They are communication, operational fires, and logistics.

Much of the disconnect in interdependence between the services is a result of the inability of the services to perform basic communication. To get to the eventual goal of effects based operations, the Army, and specifically Army Aviation, must be able to communicate effectively with other platforms on the battlefield, most notably Air Force assets. Doing so will only increase the synergy between the services and provide greater support to ground forces. The issues here result from both a technology standpoint as well as current aviation force structure.

During Operation Enduring and Iraqi Freedom, attack aviation assets were tasked with deep operations designed to shape objective areas for the follow on air assault or subsequent movement of ground forces. During Operation Anaconda, the largest military operation conducted to date in Afghanistan, AH-64 attack helicopters from the 101st Airborne Division were unaware that the prepatory close air support fires from the air force were called off only after half the targets were struck. This was due to long flight legs and terrain, but most notably, the attack helicopters did not possess long range, over the horizon communications necessary to

monitor the tactical situation. Additionally, the attack helicopter company and battalions, for that matter, do not contain organic UH-60 command and control aircraft that possess the necessary communications suite to always monitor the tactical situation. With better interoperability between the services, the attack helicopters could have loitered while the strike aircraft gained the desired effects. Although a single example, it shows the lack of interdependence, and negative effects that result from a basic lack of communication.

There are numerous other operational examples where the lack of technology in the form of communications hindered the ability of army aviation to synergize its efforts with Air Force assets. These challenges will be remedied through both the enhancements to the aircraft as well as the structure. Because the new brigades now maintain an organic battalion (the GSAB) containing a company of UH-60s, command and control difficulties will be made easier in all operations. Additionally, the upgrade to attack and other aircraft with over the horizon communications will greatly increase the interdependence between Army Aviation and its fixed wing partners in the Air Force.

Rotary wing attack helicopters are at their best when they operate in support of the ground tactical plan and are supported by tube and rocket artillery (McCaffrey, 8). Recent operations in Iraq have provided examples of success and failure in this area, and it is here that joint interdependence provides lethal effects when practiced. When aviation assets are sent into deep Battlespace without the appropriate indirect fire support from Army, Air, or Navy assets, failure will often result, as in the case of the 11th Aviation Regiment's operation early in the Iraq war. This is in direct contrast with the 101st Aviation Brigade's successful attack against the Medina Division just days later. Here, the operation utilized joint firepower against virtually the same enemy, and the brigade was able to use direct and indirect fires to maneuver to find, fix,

and destroy the enemy (Saint, 36). It is not relevant how the fires are being provided, or from what asset. This is the essence of interdependence and effects based operations. The end state is that the system is providing the effects necessary to make the mission successful. These two different results provide Joint Force Commanders great vignettes for future planning of such operations.

The logistical initiatives addressed previously will also lend to future joint interdependencies.

> "The Cold War Army designed its logistical structure for operations in developed theaters with access to an extensive host-nation infrastructure. Expeditionary operations promise neither. Simultaneity and complexity compound the eternal constraints of decreased time, vast distances, and limited resources, creating a pressing demand for a logistics system that capitalizes on service interdependencies. We must operationally link logistics support to maneuver in order to produce desired operational outcomes" (Brownlee and Schoomaker, 18).

We must harness the power of sea basing, common supply parts and chains, and distribution systems as a force to be successful in the future. Logistical interdependence will provide enormous flexibility and lethality to Joint Force Commanders, and the robustness of the aviation brigade along with the maintenance changes already addressed is a tremendous step in the direction of achieving joint interdependence.

Maintenance. The correct planning and execution of maintenance operations is the center of gravity for sustained aviation operations. The ability to plan for, resource, and execute maintenance operations can define how much combat power is brought to bear at the critical point on the battlefield. It is clear that aviation's performance in past operations was hindered through the organization and application of maintenance and logistical procedures. Practically every previous criteria discussed to this point exhibits a benefit gained by the new maintenance structure of the aviation brigade. In the future, the employment of the new brigade will ensure

that all aviation force packages contain the correct maintenance capability and systems to operate across the full spectrum of missions, as well as split assets when required by the Joint Force Commander.

INCREASING THE CAPABILITY – THE NATIONAL GUARD

There is no question the Army National Guard and Reserve forces are as integral a member in the Global War on Terrorism as the active force. They continue to operate with the active forces in every current combat theater, while maintaining their daily Homeland Defense and Security mission. Their commitment is a long term one as the Global War on Terrorism will consume Guard and Reserve forces for years to come. As a result, they must be outfitted with the same or near capability as the active force, and resourced to ensure they can meet their mission essential tasks. To this end, the Army is ensuring that the new aviation initiatives are extended from the active force to the National Guard and Reserve components.

There are currently eight National Guard divisions. With the approved force structure for the multi-functional aviation brigades, two of these divisions will have a fully equipped Multi-Functional Aviation Brigade. This will be the heavy brigade version with two battalions of AH-64D Longbow aircraft. The other six Guard Divisions will have a reduced brigade, called an Aviation Expeditionary Brigade, with only a slightly lesser capability and a primary emphasis of homeland defense and security (TF Aviation, 25). Instead of maintaining two battalions of attack aircraft, each aviation brigade will have only one attack battalion with 16 total aircraft. However, the Aviation Expeditionary Brigades, if directed, can function as a forward deployed aviation brigade headquarters.

In all, the Army National Guard and Reserve forces will retain a majority of the aviation force structure dedicated to strategic and general support missions above the division level

(Lynch, Army G3 Info Paper, 1). Reserve component units are traditionally under resourced in equipment, money, training seats, flying hours, simulators, training ammunition, repair parts, and most importantly, training time (TF Aviation, 57). Because the ultimate limitation on Reserve Component readiness is training time, the National Guard and Reserve units will continue to be programmed to execute single and platoon level operations such as fixed wing operations, MEDEVAC missions, and other general support tasks (TF Aviation, 57). This mission capability is still a great benefit to the Joint Force Commander, as it creates greater flexibility with two more multi-functional guard brigades that can be tailored and deployed for combat operations just as the active force.

INTEGRATING SPECIAL AVIATION OPERATIONS CAPABILITIES INTO THE CONVENTIONAL FORCE

An additional decision as part of the holistic modernization of Army Aviation is the effort to integrate many of the Special Aviation Operations Forces' (SOF) tactics and technologies into conventional aviation forces. The combination of the new structures and the resourcing of technology normally reserved for Special Operations Aviation will drastically increase the lethality of the conventional aviation force. This will further the capability of Army Aviation in unconventional warfare and joint operations (Erwin, 26). For many years, Special Operations Aviation Forces have operated in the joint environment as small, robust packages and have achieved great success. Because conventional Army Aviation forces now fight in many of the same environments and with the same joint partners as SOF aviation, it only makes sense to transfer some of that capability to conventional organizations, especially at a time when these new brigades are being fielded and the resources are available. Additionally, as previously discussed, the cancellation of the Comanche has given the leadership those necessary resources

to acquire some of the technologies that make SOF successful. These changes and additions will add to a Joint Force Commander's ability to employ aviation forces, especially in urban and austere environments that are likely to dominate future engagements.

Gen Schoomaker, the Army Chief of Staff, recently said that he wants conventional aviation forces to close to within 3 to 5 years in capability behind Special Operation Aviation Forces **(**Interview with BG Sinclair). Special Operations forces inherently fight jointly; therefore, it makes sense to push conventional aviation forces towards this end state. Among the seventeen enhancements or upgrades being transferred to the conventional aviation force, three of them which are extremely important will be discussed.

First, is the additional capability brought on by the Robertson Crashworthy internal fuel tank. For years, Army rotary wing aircraft utilized the Extended Range Fuel System (ERFS) Tank, a non-crashworthy fuel pod that is attached externally to the aircraft pylon. Up to four of these can be mounted to an Apache or Blackhawk helicopter. Although initially designed for ferry flights, these fuel tanks became tools during tactical execution of aviation operations to provide for extended station time during deep attacks or other mission profiles. Although they provided extended range for operations, they represented a high risk to its aircrews because of explosion due to enemy engagement or upon crash impact. Additionally, on attack aircraft, they reduce the weapons load due to the fact that one pylon station is unavailable for munitions. In effect, aircrews were forced to trade off ammunition for extra fuel which did not always match the enemy/tactical situation.

The new Robertson Fuel cell is a crashworthy device, meaning it remains intact in a crash sequence thus providing more survivability to its aircrews by reducing the possibility of a post crash fire. Additionally, it will self seal upon taking small rounds of enemy fire. Utility aircrews

no longer have to risk approaching a landing zone with friendly or coalition soldiers with a potentially explosive external fuel tank on the outside of the aircraft. For attack aircrews, the 130 gallon internal tank still provides the aircraft with up to 300 rounds of 30mm and all four weapons stations are available for rockets and hellfire missiles. The result is an aircraft that is more crashworthy, maintains more station time, and provides the crew with virtually the same amount of firepower. For Joint Force Commanders, this provides more flexibility during all operations and greater lethality forward in the Battlespace for a longer period of time. Additionally, the aircrews maintain a greater level of force protection.

Another capability that has been transferred from Special Aviation Operations Forces to the conventional force is the use of liaison officers across all functioning maneuver units of action.

> "LNO positions are a prized job in SOF and the United States Marine Corps. LNO training is institutionalized for the particular operation conducted. LNOs are employed both vertically to higher headquarters and horizontally to applicable units, ensuring parallel planning and full integration. LNOs provide for the integration of experienced leaders at requisite echelons of command" (TF Aviation, 38).

As discussed previously, this new liaison element is called the Brigade Aviation Element, and is responsible for the following:

- Integrating/synchronizing Aviation into the Unit of Action Commander's scheme of maneuver
- Coordinating directly with the Aviation Brigades
- Integrating/synchronizing the plan with the Air Liaison Officer and Fire Support Officer

- Provide employment advice and planning on the use of UAVs, reconnaissance, attack, assault, air movement, sustainment, and MEDEVAC operations
- Battlespace planning, coordination, and de-confliction for Combined Arms and Joint Operations (TF Aviation, 39).

To ensure that this cell is robust enough to conduct continuous operations, the following personnel will be assigned to the Brigade Aviation Element (BAE):

MAJ Brigade Aviation Officer

CPT Aviation Tactical Operations Officer

CW3 Aviation Planner/Battlespace

SFC Flight Operations/Battlespace

SSG Flight Operations/UAV

SPC Flight Operations/RTO (TF Aviation, 39).

This capability will provide terrific situational awareness and integration of all aviation assets at the joint level during both planning and mission execution. Joint Force Commanders will now have maneuver brigade combat teams that will be able to integrate and maximize their Army Aviation assets while developing trust and confidence in the "BAE' in terms of continual support on the battlefield.

A third program that is being transferred into conventional aviation units is the Tactical Operational Scene (TOPSCENE) database system. A pre-mission planning tool, TOPSCENE utilizes overhead image data from satellites and other sources, and converts the two dimensional images into three-dimensional "fly through" and "walk through" battlefield visualization simulation scenarios.

(http://www.missilesandfirecontrol.com/our_products/productdevelopment/TOPSCENE/product-TOPSCENE.html - sole source website for this section).

By using real-world images, aviation crews can repeatedly rehearse any mission, taking advantage of visually significant cues and aim points. By knowing exactly what the terrain and built-up areas will look like during execution, the rehearsal benefit greatly increases probability of mission success.

Not only can the TOPSCENE system benefit aircrews during preparation for combat missions with its embedded ability to stop, scale, slew and rotate the image, troops at all echelons can benefit from being able to study a simulation in-depth before actually entering a hostile environment. Additionally, the TOPSCENE system can create a data base from images in about two hours, making it possible to train on actual terrain in near-real time.

A “free roam” capability lets the operator select helicopter motion using simulated cyclic and collective response, or guided missile seeker motion using only the control stick. Additionally, a “walking” mode can slow the image to simulate a walking pace at ground level. External mission planning systems define the specific mission profile of mission “legs” or route segments and transfer the information to TOPSCENE. Specific identification points, navigation updates and targets have the associated longitudes and latitudes that allow navigation using accurate ground control. Printed screen snapshots are provided and an external video recorder can capture the mission on videotape for further review away from the unit.

The benefits to the aircrews and mission execution gained from TOPSCENE cannot be overstated. Besides the aviation benefit, Joint Force Commanders will now have this tool at their disposal in the formulation of mission orders and intelligence preparation of the battlefield. Besides reducing risk to aircrews and soldiers alike through familiarity of the Battlespace,

commanders can also put together the right aviation package for the mission by having a better idea of the terrain features, enemy infrastructure, and restrictions it may present. The TOPSCENE system will also add a measure of survivability and force protection to aircrews through the detailed rehearsal capability.

ARMY AVIATION'S ROLES TIED TO THE JOINT FUNCTIONAL CONCEPTS

Perhaps the most relevant and important role of the new aviation brigade as it has been organized is the nesting with the Joint Functional Concepts. On a larger level, Army Aviation has been restructured to ensure it can continue to meet the objectives set out in the National Military Strategy and the 1-4-2-1 construct. Listed, the Joint Functional Concepts are Command and Control, Battlespace Awareness, Force Application, Focused Logistics, and Protection. These are the "means" identified by our senior leaders in terms of how our forces will wage joint warfare as we continue transformation across the Department of Defense. As the Army Aviation leadership has built the new brigade structure, much attention was given to ensure that the end product is nested well in the Joint Functional Concepts.

In many ways, Army Aviation will act as the "quarterback" of the joint battlefield, with its staying power and ability to communicate interdependently with Air Force and Navy assets (Interview with MG Quinlan). Furthermore, with the increased communications ability, the situational awareness provided to a Joint Force Commander will provide a position of advantage to the whole joint force. Dominant maneuver by all forces will be maximized, and the implementation of discussed technologies in army aviation will allow army air assets to see the entire battlefield, enabling great firepower and advantage to the joint force.

In April of 2004, The Joint Requirements Oversight Council (JROC), chaired by General Peter Pace, the Vice Chairman of the Joint Chiefs of Staff, validated the enclosed capabilities for the five initial Joint Functional Concepts. In this section, each Joint Functional Concept will be defined, with the capabilities listed as prescribed by the JROC. A discussion will follow that will operationally link the aviation brigade to each concept by showing its gained battlefield capability.

Battlespace Awareness. Battlespace Awareness is the situational knowledge whereby the Joint Force Commander plans operations and exercises command and control (DTIC).

Identified Capabilities:

a. Command and control Battlespace Awareness assets.

b. Execute collection.

c. Exploit and analyze.

d. Model/ simulate and forecast/predict.

e. Manage knowledge (archive and share information) (DTIC).

At the joint operational level, the aviation brigades and their gained technologies will provide the Joint Force Commander with aerial platforms to develop the situation in and out of contact, set conditions, maneuver to positions of advantage, and close with and destroy the enemy (LTG Curran Speech). Developing the situation through collection and managing information will provide the Joint Force Commander with the correct common operational picture that will allow friendly forces to stay a step ahead of the enemy.

Specifically, the manned and unmanned concept utilizing the UAV provides commanders at all levels up to and including the JFC extraordinary battlefield and situational awareness, and provides intelligence for necessary shaping operations prior to the introduction of ground forces. Additionally, the digital downlink capabilities of the UAV and other platforms will allow for the sharing of intelligence on a rapid basis which will provide for quicker decision making during critical portions of combat operations.

Command and Control (C2). Joint C2 will provide the Joint Force Commander an ability to have a networked, dispersed, joint force that can work together in a virtual problem space, accessing any piece of information, any place and at any time, in response to any operation across the ROMO (DTIC).

Identified Capabilities: a. Monitor and collect data.

b. Develop situational understanding.

c. Develop courses-of-action (COAs) and select one.

d. Develop a plan.

e. Execute the plan (including providing direction and leadership to subordinates).

f. Monitor execution/ dynamically adapt as necessary.

g. Execute the basic C2 process.

h. Network.

i. Share information.

j. Interact.

k. Develop shared awareness.

1. Develop shared understanding.

m. Decide in a collaborative environment.

n. Synchronize.

o. Execute the C2 collaborative process (DTIC).

In war, communication is a fundamental requirement. Commanding and controlling forces is about communication across all levels of command, and the common operational picture that develops is essential for mission execution. In future conflicts across all operational environments, it is essential that Commanders communicate with decentralized forces. The future of command and control rests with making decisions in the collaborative environment. "To succeed, this effort requires the alignment and synchronization of three major elements: operational concepts and doctrine, horizontally and vertically integrated systems, and the

underlying joint technical architectural standards and global information grid (GIG) infrastructure in which the layered networks are nested" (LTG Curran Speech).

The aviation leadership has gone to great lengths to ensure the aircraft and organizations are outfitted to function as a system that can integrate with other joint assets both horizontally and vertically. First, from pure communication standpoint, with the addition of the General Support Aviation Battalion, every tailored aviation force package will contain an organic command and control platform with the radio suite that is necessary to reach over the horizon to another aerial platform, a higher headquarters, or down to a ground unit in contact.

The UAV also offers advances for the JFC in command and control through the Manned and Unmanned concept in a collaborative environment. "A joint air component commander who can impose order through net-centric warfare and then disseminate a common intelligence picture also must integrate army aviation into the three dimensional battlefield and the common operating picture" (McCaffrey, 8). The manipulation of the UAV will allow Joint Force Commanders to gain that common operational picture which well result in greater command and control capabilities throughout the depth of the Battlespace.

Focused Logistics. The central idea of focused logistics is to build sufficient capacity into the deployment and sustainment pipeline, exercise sufficient control over the pipeline from end to end, and provide a high degree of certainty to the supported Joint Force Commander that forces, equipment, sustainment, and support will arrive where needed and on time (DTIC).

Identified Capabilities:

a. Joint deployment and rapid distribution.

b. Agile sustainment.

c. Operational engineering.

d. Multinational logistics.

e. Force health protection.

f. Logistics information fusion.

g. Joint theater logistics management (DTIC).

This is perhaps the most important long term aspect in the new holistic approach to the aviation structure. "In the noncontiguous and nonlinear Battlespace of the future, it is highly unlikely that theater distribution will continue to remain the exclusive domain of the Army, which has historically depended upon the ability to build up infrastructure and supplies along secure ground lines of communication" (LTG Curran Speech). As a result, more agile sustainment and more efficient operational engineering are critical to the Joint Force Commander.

Although the Army by itself cannot solve the issue of joint theater logistics management, the new brigades do maintain the near term capability to be more sustainable through two level maintenance and the placement of more maintenance assets forward. This will provide for a faster distribution of parts and labor, and in the shift to condition based maintenance, this process will only become more streamlined. This will result in Army Aviation being able to get to the fight faster, and in support of the joint force. Additionally, these brigades have been designed to take advantage of advanced operational engineering as diagnostic programs become available. This will reduce the amount of scheduled maintenance to the aviation fleet which ultimately results in more combat power available to our Joint Force Commanders.

Protection. Protection is a process, and a set of activities and capabilities, by which the joint force protects personnel (combatant/non-combatant), information, and physical assets against the full spectrum of threats (DTIC).

Identified Capabilities: a. Protect personnel.

b. Protect physical assets.

c. Protect information (DTIC).

Full Dimensional Protection involves both active and passive capabilities of Army Aviation to protect both personnel and physical assets using its speed and agility (TRADOC Pamphlet 525-80, 4). First, because all maneuver brigades will have the same rotary wing assets, reconnaissance and attack aviation can be used to force protect through missions such as armed reconnaissance and suppression of enemy air defense (SEAD). Here, armed reconnaissance aircraft, teamed with UAVs will conduct security operations for joint and multinational forces. Also, these aircraft can be utilized to protect long ground lines of communication or those hindered by terrain (TRADOC Pamphlet 525-80, 4).

On the utility side, the addition of MEDEVAC aircraft and the general support battalion provide an incredible force protection component in terms of casualty evacuation, combat search and rescue, and resupply operations. Prior to this new design, as previously discussed, this capability did not exist organically at every aviation brigade. These operations always required "attached or operationally controlled assets" to perform these missions. With a complete range of capabilities now contained in every brigade, Joint Force Commanders will have the ability to protect the force with the full compliment of aerial rotary wing platforms.

Force Application (FA). Force application is the integrated use of maneuver and engagement to create the effects necessary to achieve assigned mission objectives (DTIC). Identified Capabilities: a. The overarching FA capability is the integrated use of maneuver and engagement to create the effects necessary to achieve assigned mission objectives.

b. The ability to move forces to create effects.

c. The ability to engage with (kinetic/ nonkinetic) means to create effects (DTIC).

The Army leverages the effects of fires on the battlefield from the other services now more than ever. The reduction in Army field artillery and air defense artillery units in addition to other unit types is an indication of the necessity of gaining effects based results from the joint interdependence between services. "Interdependence of joint fires will be vital to mitigating risk and reducing reliance on organic fires in a joint expeditionary environment. Soldiers need the entire target acquisition and engagement resources of the theater at their fingertips" (LTG Curran Speech).

The use of precision munitions and effects against stationary and moving targets will continue to be a necessity of future warfare. Aviation remains the Army's platform of choice for close air support as a maneuver element to engage a wide variety of effects in support of the ground scheme of maneuver. In concert with the platforms of other services, the new aviation brigade's robust structure allows them to move throughout the Battlespace to create the Joint Force Commander's desired effects. Whether it is the precision effects of attack aviation or the vertical envelopment to deliver ground forces on an objective using lift assets, the lethality of the aviation brigade has been upgraded to provide the Joint Force Commander with a homogeneous force application capability. Operations will be conducted across the spectrum of operations and both with kinetic and non-kinetic means. Additionally, the technological advances to the aircraft will leverage an eventual collaborative information environment to provide fire and maneuver to even the smallest tactical units in contact. Army aviation has the ability to be the true "quarterback" of the joint battlefield.

CONCLUSION

Starting with the collapse of the Soviet empire in 1989, world events clearly shifted the threat paradigm for the United States Armed Forces from the Cold War model to the Global War on Terrorism. However, the United States Army, and specifically, Army Aviation, was slow to realize this shift and adjust its force structure, training, and doctrine to this new asymmetrical environment. What resulted were formations that were neither robust nor responsive enough for Combatant Commanders in places like Kosovo, Iraq, and Afghanistan.

Following the Task Force Hawk operation, Dana Priest of the Washington Post wrote "the vaunted helicopters came to symbolize everything wrong with the Army as it enters the 21st century; its inability to move quickly; its resistance to change; its obsession with casualties; its post-Cold War identity crisis" (McCaffrey, 8). Army Aviation exhibited many issues that were nested within these major challenges. Its formations were not adjusted to face the present day threat, and too much capability was contained in higher level aviation organizations. The result was not enough force structure at the division, and subsequently brigade level, where it is needed. Additionally, there were five different types of formations, none of which were robust enough to operate effectively at the JTF level.

Current army transformation to the new multi-functional aviation brigades clearly addresses most of these issues. The new global, asymmetrical threat has been identified correctly, and the leadership has made the commitment to wholesale change in response to the threat. This will ensure that forces will move more quickly to be able to provide Combatant Commanders the correct capability in any region of the globe.

Specifically, this paper has shown how the transformation of Army Aviation will provide more flexibility and combat power to Combatant and Joint Force Commanders in future

operational environments. Through a massive redesign of its force structure into modular, identical brigades Army wide, Army Aviation will remedy many of the operational shortcomings displayed in recent conflicts from Operation Allied Force up to and including Operation Iraqi Freedom. This is accomplished by cutting force structure at corps and above aviation units and redistributing aircraft at division and brigade level. This ultimately puts more combat power in the hands of our operational and tactical level commanders at the Joint Task Force level.

Utilizing a basic company building block size common to every brigade, the aviation force will be more tailorable for specific operations, resulting in extremely flexible task organizations. This characteristic will enable Army Aviation to deploy easier and faster, all with a reduced logistical tail once in theater. The aviation allocated to a Joint Force Commander will come from the same unit, which erases the "ad hoc" nature of past operations, resulting in smooth unit deployments. Additionally, the organic intelligence capability is increased down to the lowest tactical level through the introduction of Unmanned Aerial Vehicles. Taking this concept a step further, manned and unmanned teaming initiatives with UAVs and attack aircraft will provide the Joint Force Commander with a common operational picture necessary for critical decisions during combat missions. In this way, Army Aviation will function as the "quarterback" of the joint battlefield, providing real time information to all joint players at the decisive points of the operation.

The transfers in technology from Special Operations Aviation to the conventional force will assist in reducing the capability gap between the two entities. This initiative will make the new brigades more relevant in the Global War on Terrorism and realizes more interdependence with the joint force. Finally, through maintenance reorganization and emerging diagnostic technologies, Army Aviation will provide more combat ready aircraft to our Joint Force

Commanders. This all equates to a large amount of flexible combat power available for any combat operation.

Army Aviation has come a long way since its inception as a branch in 1983. In just over twenty short years it has been integrated and fought as an important and sometimes decisive combat arm on many battlefields. As the Services track towards maximizing jointness, Army Aviation has the capability to perform in the same manner on the joint battlefield as well. The new multi-functional brigade has been designed to specifically support joint doctrine by way of the Joint Functional Concepts. These concepts are the means, or the executable tenets that will define how the armed forces will fight in the future. They are the "battlefield operating systems" employed in the joint Battlespace, and Army Aviation has transformed itself to be a key combat multiplier within them.

As General Schoomaker recently remarked, "Army Aviation has more potential than any other branch – we just have not maximized its potential. My commitment to you is we are going to make Army Aviation the best damn outfit on the battlefield. We owe it to our Soldiers, our Army and the Nation" (Sinclair, Nov 2004). With these words, the Army Chief of Staff set Army Aviation on a course of transformation to ensure relevance in the joint warfight as the Global War on Terrorism is prosecuted for years to come. What is resulting is a reorganized force optimally designed with like structures that are lethal and sustainable across the range of military operations.

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